

AD-769 607

HELAST II. A FIELD STUDY OF THE EFFECTS  
OF MOBILITY/AGILITY ON TARGET PRESENTA-  
TION AND DEFENDER REACTION. ADDENDUM

Andrew J. Eckles, III, et al

Human Engineering Laboratory

Prepared for:

Department of the Army

July 1973

DISTRIBUTED BY:

**NTIS**

National Technical Information Service  
U. S. DEPARTMENT OF COMMERCE  
5285 Port Royal Road, Springfield Va. 22151

# U. S. ARMY

## ADDENDUM

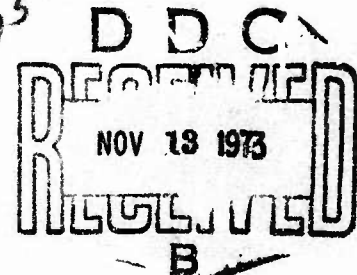
### HELAST II

A FIELD STUDY OF THE EFFECTS OF MOBILITY/AGILITY  
ON TARGET PRESENTATION AND DEFENDER REACTION

Andrew J. Eckles, III  
Thomas A. Garry  
William C. Mullen  
Herbert Aschenbrenner

AD 769607

HELAST I - AD-757170



July 1973  
AMCMS Code 612106.11.81900

## HUMAN ENGINEERING LABORATORY



Reproduced by  
NATIONAL TECHNICAL  
INFORMATION SERVICE  
U. S. Department of Commerce  
Springfield VA 22151

**ABERDEEN PROVING GROUND, MARYLAND**

Approved for public release;  
distribution unlimited.

Handwritten mark resembling a stylized 'L' or '7'.

## ADDENDUM

The HELAST II study generated considerable data of peripheral interest to the main objectives or in some cases data beyond that required to meet the objectives. All data, however, are available in various formats, which can be supplied to qualified agencies for further analyses upon request.

The following data are available:

Supplementary Appendix B: A detailed verbal description made by an observer moving in an M60 tank over each of the seven target courses.

Supplementary Appendix C: Contains detailed data on target intervisibility for each defender position on each of the seven target courses. A sample of one course is presented in Appendix C of the report.

Supplementary Appendix F: Detailed descriptions of target size/aspect at time of trigger pull, and position of gunner's aiming cross on the target at time of trigger pull. Again, samples of these data are included in Supplementary Appendix G of the report.

Supplementary Appendix H: A deck of punched cards providing gunners's tracking errors obtained during the conduct of Phase I.

Supplementary Appendix I: A deck of standard 80-column punched cards and the RAMUS data file containing all basic data obtained on Phase III, described as follows:

### General

The data are arranged in an 80-column format and consist of alpha-numerics only. No special characters are used. The arrangement of data is identical on the cards and in the data file. A description of the data in each column is given in Table 1.

### Details

Columns 1 and 2 giving defender platoon and crew. Column 3 through 6 show which vehicles were available as targets for the defender. The number of targets varied from 1 to 3 with the first target indicated in the left-most column and unused columns filled with zeros. Column 6 is reserved for future work where more than three simultaneous targets may be presented. In these data, column 6 always contains a zero.

Columns 8 through 11 show the course on which each vehicle appeared. The course designations are in the same order as the vehicle designations, i.e., the vehicle in column 3 ran on the course in column 8, etc. In keeping with the vehicle information, the first course designation occupies the left-most column. However, unused columns contain a blank rather than a zero.

Columns 13 through 16 show the segment of the course occupied by the vehicles presented. The segment's position in the 4 column field corresponds directly with the position of the course to which it applies. Unused columns are filled with zeros.

TABLE 1  
COLUMN IDENTIFICATION

Column	Data	Explanation
1	Defender Platoon Identification	The defender platoon: A, B, or C
2	Defender Number	The particular defender responsible for the line of data: 1, 2, 3, 4, or 5
3-6	Target vehicle available	"1" = M-60 "2" = M-113 "3" = X-300
7	Blank	
8-11	Course on which vehicle appears	A, B, C, D, R, W, or G
12	Blank	
13-16	Segment of course on which vehicle appears	1, 2, 3, 4, 5, 6, or 7
17	Blank	
18	Number of alerts during the element	
19	Blank	
20	Number of identifies during the element	
21	Blank	
22	Number of first trigger pulls during the element	
23	Number of second trigger pulls during the element	
24	Blank	
25-28	Start time of element	Given as XXYY "XX" = minutes "YY" = seconds
29	Blank	

Column	Data	Explanation
30-33	Stop time of element	Same as start time
34	Blank	
35-36	Run number identification	
37	Blank	
38-41	Alert time	Same as start time
42	Blank	
43-46	Time identified	Same as start time
47	Blank	
48	Number of exposures	Number of distinct periods of target in view
49	Blank	
50	Vehicle causing alert	The particular vehicle being fired on
51	Course on which vehicle in column 50 appeared	
52	Blank	
53-56	Time at which first round fired	Same as start time
57	Aspect presented by target at time of first fire	"F" = frontal "O" = quartering "S" = side
58	Height of target visible at time of first fire	1 = cupola only 2 = $\frac{1}{2}$ of turret 3 = full turret 4 = $\frac{1}{2}$ of hull 5 = full hull
59	Blank	
60-62	Percent of potential target visible at first fire	1 to 100%
63	Blank	
64-67	Time at which second round fired	Same as start time

Column	Data	Explanation
68	Aspect of target at time of second fire	Same as column 57
69	Height of target at time of second fire	Same as column 58
70	Blank	
71-73	Percent of potential target visible at time of second fire	Same as columns 60-62
74-77	Blank	
78-79-80	Card identifier	Number starts at 1 and increases sequentially for each run. Leading zeroes are suppressed and show as a blank.

---

The data presented in columns 18 through 33 will be explained with reference to the way the experiment was conducted. Each "run" consisted of a number of "elements." An element is defined as that section of a run during which the target vehicles moved from one programmed stopped position to the next programmed stop. All stop positions were chosen so that the target was concealed from the defender during the stop. The "start" and "stop" times given are for all the events in a given element. Usually, the times given increased throughout the run, but in a few cases the run-time clock was reset to zero within a run. In these cases, the new zero time came at the beginning of an element. When multiple targets were presented, it was possible for a defender to engage several targets during a single element. Columns 18 through 23 summarize the particular defender's actions during an element. In those cases where more than one target was engaged during an element, new data lines were written to show each event. The second and subsequent data lines of an element are duplicates of the first line of the element up to column 36, except for columns 18, 20, 22 and 23, which are filled with zeros after the first line of the element.

The remaining columns give the times at which various events occurred, and target aspect and visibility at time of fire. If an event did not occur, that field contains blanks.

#### Example

The following sample of data is from the multiple target presentations:

B11120 GRW	1110 4 4 43 0000 0139 23 0007 0008 1 2W 001005 100 0017S5 100	1
B11120 GRW	1110 0 0 00 0000 0139 23 0021 0026 1 1R 0028F5 75 003405 20	2
B11120 GRW	1110 0 0 00 0000 0139 23 0045 0059 1 1G 0103F5 90 010805 90	3
B11120 GRW	1110 0 0 00 0000 0139 23 0115 0123 2 2W 013005 40	4
B12130 ARB	1110 3 1 00 0304 0410 23 0316	5
B12130 ARB	1110 0 0 00 0304 0410 23 0325 0326	6

The first line shows:

- (1) The defending platoon is "Bravo" platoon.
- (2) The defender is number one
- (3) a. An M60 appeared on "G" course, segment 1  
b. Another M60 appeared on "R" course, segment 1  
c. An M113 appeared on "W" course, segment 1
- (4) During this element the commander called 4 alerts and the gunner made 4 identifications
- (5) The element started at time 00:00 and stopped at 01:39
- (6) The run is number 23

- (7) The first alert was called at 00:07 .....
- (8) The first identification was made at 00:08
- (9) The number of exposures of this target was one
- (10) The vehicle that caused the alert was the M-113 on "W" course
- (11) The first round was fired at 00:10 when the target presented a quartering aspect, the full hull was exposed and the target was 100% visible.
- (12) The second round was fired at 00:17 when the target presented a side aspect, the full hull was exposed and the target was 100% visible.

The second, third, and fourth lines all show the same start and stop times as the first line indicating that they all contain data from the same element of the run. The fifth line, however, shows a new start time which indicates a new element.